

5 (b) a data splitter adapted to split a received 100 Mbps Ethernet stream into
6 one to four 25 Mbps data upstream signals;
7 (c) a 100BaseS port having one to four DSL ports coupled to said data
8 splitter, wherein each DSL port is adapted to generate a separate upstream DSL
9 signal from a 25 Mbps data upstream signal, wherein each generated upstream
10 DSL signal is coupled to a corresponding separate copper twisted pair wire
11 connected to said DSL port, wherein each DSL port is further adapted to receive
12 a downstream DSL signal and to generate a 25 Mbps downstream signal,
13 wherein each 25 Mbps downstream signal is received over said corresponding
14 copper twisted pair wire; and
15 (d) a data collection and reorganization unit coupled to said one to four DSL
16 ports and adapted to assemble said one to four 25 Mbps downstream signals
17 into a single 100 Mbps Ethernet data stream for transmission by said physical
18 layer module.

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cont
1 19. The modem according to claim 18, comprising a flow and rate control memory for
2 storing the 100 Mbps Ethernet data stream assembled by said data collection and
3 reorganization unit, wherein the flow and rate control memory is provided to soak
4 differences in transmitting rates between said 100BaseS port and said 100BaseT port.

1 20. The modem according to claim 19, comprising a configuration and auto sense
2 unit for sensing the number of DSL ports of the 100BaseS port installed in the modem.

1 21. The modem according to claim 20, comprising a MII interface, which is
2 connected to the physical layer module via a 2port MII bridge.

1 22. The modem according to claim 21, comprising a controller for configuring the MII
2 interface, the data collection and reorganization unit and the data splitter depending on
3 the number of DSL ports sensed by said configuration and auto sense unit.

23. A point to point facility transport system fore the symmetrical bi-directional transport of 100BaseTX Ethernet frame data over N copper wire pairs connecting a central office facility to a customer premise, comprising:

N downstream data transmission paths for transporting a single 100BaseTX Ethernet signal from the central office facility to the customer premise, each downstream transmission path operative to transport a 25 Mbps data stream;

N upstream transmission paths for transporting a single 100BaseTX Ethernet signal from the customer premise to the central office facility, each upstream transmission path operative to transport path operative to transport a 25 Mbps data stream;

first modem means located at the central office facility and coupled to one end of said N downstream transmission paths and one end of said N upstream transmission paths;

second modem means located at the customer premises and coupled to the other end of said N downstream transmission paths and the other end of said N upstream transmission paths;

wherein said first modem means and said second modem means are operative to place onto and receive from said N copper wire pairs, data frames encapsulating said 100BaseTX Ethernet frame data; and

wherein said first modem means and said second modem means further comprises:

- (a) a 100 BaseT port connected to a physical layer module adapted to receive and transmit 100BaseT Ethernet signals;
- (b) a data splitter adapted to a split received 100 Mbps Ethernet stream into one to four 25 Mbps data upstream signals;
- (c) a 100BaseS port having one to four DSL ports coupled to said data splitter, wherein each DSL port is adapted to generate a separate upstream DSL signal from a 25 Mbps data upstream signal, wherein each generated upstream DSL signal is coupled to a

31 corresponding separate copper twisted pair wire connected to a
32 DSL port, wherein each DSL port is further adapted to receive a
33 downstream DSL signal and to generate a 25 Mbps downstream
34 signal, wherein each 25 Mbps downstream signal is received over
35 said corresponding copper twisted pair wire; and
36 (d) a data collection and reorganization unit coupled to said one to four DSL
37 ports and adapted to assemble said one to four 25 Mbps
38 downstream signals to a single 100 Mbps Ethernet data stream for
39 transmission by said physical layer module.

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1 24. The facility transport system according to claim 23, wherein the downstream
2 transmission path utilizes quadrature amplitude modulation (QAM) to transport said
3 Ethernet frame data from said central office facility to said customer premise.

1 25. The facility transport system according to claim 23, wherein said upstream
2 transmission path utilizes quadrature amplitude modulation (QAM) to transport said
3 Ethernet frame data from said customer premise to said central office facility.

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1 26. The facility transport system for a symmetrical bi-directional transport of
2 100BaseTX Ethernet frame data over N copper wire pairs connecting a central office
3 facility to a customer premise, comprising:

4 N downstream transmission paths for transporting a single 100Base TX
5 Ethernet signal from the central office facility to the customer premise, each
6 downstream transmission path operative to transport a 25 Mbps data stream;

7 N upstream transmission paths for transporting a single 100BaseTX
8 Ethernet signal from the customer premise to the central office facility, each
9 upstream transmission path operative to transport a 25 Mbps data stream;

10 switch means located at the central office facility and coupled to one end
11 of said N downstream transmission paths and one end of said N upstream
12 transmission paths;

13 a network element located at the customer premises and coupled to the
14 other end of said N downstream transmission paths and the other end of said N
15 upstream transmission paths;

16 wherein each switch means and said network element are operative to
17 place onto and receive from said N copper wire pairs data frames encapsulating
18 100BaseTX Ethernet frame data and wherein N is a positive integer in the range
19 of one to four;

20 wherein each switch means and network elements comprises at least one
21 modem having :

22 (a) a 100BaseT port connected to a physical layer
23 module adapted to receive and transmit 100BaseT Ethernet
24 signals;

25 (b) a data splitter adapted to split a received 100 Mbps
26 Ethernet stream into one to four 25 Mbps data upstream signals;

27 (c) a 100BaseS port having one to four DSL ports
28 coupled to said data splitter, wherein each DSL port is adapted to
29 generate a separate upstream DSL signal from a 25 Mbps data
30 upstream signal, wherein each generated upstream DSL signal is
31 coupled to a corresponding separate copper twisted pair wire
32 connected to said DSL port,

33 wherein each DSL port is further adapted to receive a
34 downstream DSL signal and to generate a 25Mbps downstream
35 signal,

36 wherein each 25 Mbps downstream signal is received over
37 said corresponding copper twisted pair wire; and

38 (d) a data collection and reorganization unit coupled to
39 said one to four DSL ports and adapted to assemble said one to

40 four 25 Mbps downstream signals into a single 100 Mbps Ethernet
41 data stream for transmission by said physical layer module.

1 27. The facility transport system according to claim 26, wherein each downstream
2 transmission path utilizes quadrature amplitude modulation (QAM) to transport said
3 100BaseTX Ethernet frame data from said central office facility to said customer
4 premise.

1 28. The facility transport system according to claim 26, wherein each upstream
2 transmission path utilizes quadrature amplitude modulation (QAM) to transport said
3 100BaseTX Ethernet frame data from said customer premise to said central office
4 facility.

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